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Assignee: Intel Corporation

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT : David M. PUTZOLU
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TITLE : METHOD AND SYSTEM FOR DYNAMIC APPLICATION
LAYER GATEWAYS
GROUP ART UNIT : 2157
EXAMINER : Barbara N. BURGESS

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APPEAL BRIEF

SIR:

This is a brief in support of an appeal filed in the above-identified application.

I. Real Party in Interest

The real party in interest is the Assignee, Intel Corporation.

II. Related Appeals and Interferences

There are no other appeals or interferences known to Appellant, Appellant's legal representative, or Assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in this Appeal.

III. Status of Claims

The application as filed included claims 1-22. Claims 23-25 were added, but subsequently canceled. Claim 10 was also canceled. Accordingly, claims 1-9 and 11-22 remain pending and are herein on appeal.

IV. Status of Amendments

No amendments were filed subsequent to the final rejection mailed July 17, 2001.

V. Summary of the Invention

The present invention relates to a mobile network agent that performs application layer gateway (ALG) functionality. Examples of ALG functionality include acting as a web cache, a firewall, a media translator or a web page translator (paragraph bridging pages 1 and 2). In embodiments, the agent may be a software module with the capability to move from node to node on a network and to execute on the nodes to which it moves (page 4, lines 21-22). When it moves to a node, an agent may provide ALG functionality at the node (page 3, lines 1-3). Embodiments of the invention thereby obviate the need for a network administrator to physically visit a device which is to function as an ALG (page 5, lines 18-19).

In one embodiment, a mobile agent alters routing information on a network so that relevant traffic is diverted to the agent (page 21, lines 1 and 2). To divert the relevant traffic, a routing device near (in the network topology) a network node to which a mobile agent has been sent may be reconfigured (page 21, lines 14-17). More specifically, a routing table of the route device may be altered so that relevant traffic is rerouted to the agent (page 21, lines 18-19).

FIG. 7 illustrates an example. FIG. 7 shows a network 4 comprising a plurality of nodes. A node 42 has a mobile agent 512, that moved to node 42 from node 50 (page

27, line 1). The mobile agent 512 modifies the routing table 500 on route device 36 so that all IP packets destined for client devices 522, 524 and 526 are instead sent to node 42 (page 27, lines 11-13). At node 42, the agent 512 performs ALG functionality, that is, processes a re-routed data packet (page 28, line 1).

VI. Issues

A. Can the Examiner's final rejection under 35 USC 103(a) of claims 1, 4-5, 7, 9, 13, 15, 17, 21 and 22 as being unpatentable over Yamamoto et al. (US 6,282,563 B1) in view of Li et al (US 6,119,165) be sustained?

B. Can the Examiner's final rejection under 35 USC 103(a) of claims 2, 11 and 18 as being unpatentable over Yamamoto et al. in view of Li et al and further in view of Bhide et al. (US 5,852,717) be sustained?

C. Can the Examiner's final rejection under 35 USC 103(a) of claims 3, 12 and 19 as being unpatentable over Yamamoto et al. in view of Li et al and further in view of Jones (US 5,832,221) be sustained?

D. Can the Examiner's final rejection under 35 USC 103(a) of claims 6, 8, 14 and 16 as being unpatentable over Yamamoto et al. in view of Li et al and further in view of Turek et al. (US 6,460,070) be sustained?

VII. Grouping of Claims

A. As to the rejection under 35 USC 103(a) of claims 1, 4-5, 7, 9, 13, 15, 17, 21 and 22 as being unpatentable over Yamamoto et al. in view of Li et al., the claims stand or fall together.

B. As to the rejection under 35 USC 103(a) of claims 2, 11 and 18 as being unpatentable over Yamamoto et al. in view of Li et al and further in view of Bhide et al., the claims stand or fall together.

C. As to the rejection of under 35 USC 103(a) of claims 3, 12 and 19 as being unpatentable over Yamamoto et al. in view of Li et al and further in view of Jones, the claims stand or fall together.

D. As to the rejection under 35 USC 103(a) of claims 6, 8, 14 and 16 as being unpatentable over Yamamoto et al. in view of Li et al and further in view of Turek et al., the claims stand or fall together.

VIII. Arguments

A. With respect to issue (A) identified above, Yamamoto et al. and Li et al. do not render claims 1, 4-5, 7, 9, 13, 15, 17, 21 and 22 unpatentable under 35 USC 103(a).

Neither Yamamoto et al. nor Li et al. suggests "re-routing relevant traffic to a target device."

To establish a prima facie case of obviousness under § 103, all claim limitations of a claimed invention must be taught or suggested by the prior art. See MPEP, Section 2143.03 and In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In view of the foregoing authority, Yamamoto et al. (hereafter, "Yama") and Li et al. (hereafter, "Li") cannot support the asserted rejection, as explained below.

Independent claim 1 herein on appeal requires:

- moving an agent from a first device to a target device;
- re-routing relevant traffic to the target device; and

- performing application layer gateway functionality by the agent at the target device.

A concrete example is given in the above "Summary of the Invention."

Specifically, a mobile agent 512 is moved from a node 50 to a node 42 -- a target device. The mobile agent 512 re-routes relevant traffic to the target device by altering a routing table in a neighboring node, node 36. At the target device, the agent 512 performs ALG functionality, processing data packets re-routed to the target device.

Yama is completely silent as to the claimed arrangement. In particular, for example, Yama does not disclose re-routing relevant traffic to a target device.

The Examiner contends otherwise. In the "Response to Arguments" section of the final Office Action mailed February 3, 2004 (p. 9, item 6(a)), the Examiner asserts that "it is **evident** that Yama discloses re-routing relevant traffic," etc. (emphasis in original), and cites as support Yama at col. 3, lines 15-28, lines 38-55, and col. 4, lines 42-57. The cited portions of Yama are reproduced below for ease of reference, but in summary, describe moving an agent to a temporary storage computer when a destination computer is not ready to receive the agent. A message targeted to the agent may follow the agent to the temporary storage computer. When the destination computer can receive the agent, the agent moves from the temporary storage computer to the destination computer, and the message follows the agent.

As noted, the cited portions of Yama are reproduced below for convenience.

(col. 3, lines 15-28):

"A method performed by a first computer, which is a source, to move an agent from the first computer comprises the steps of: converting the agent into a bit sequence for transmission of the agent; checking whether a second computer which is a destination of the agent can receive the bit sequence; and transmitting an address of the second computer and the bit sequence to the temporary storage computer when it is determined that the second computer cannot receive. When the agent can not move directly to the destination, in principle, the temporary storage computer is employed. When it is determined that the second computer can receive the bit sequence, an address of the second computer and the bit sequence are transmitted to the second computer."

(col. 3, lines 38-55):

"A method performed by a second computer, which is a destination, for moving an agent from a first computer, which is a source computer, comprises

the steps of: determining whether the second computer can receive an agent in response to receiving an agent reception request from the first computer; transmitting a response representing receptibility to the first computer when the second computer can receive the agent; receiving a bit sequence for transmission of the agent from the first computer; and converting the bit sequence to generate an agent having a form executable in the second computer. When the second computer cannot receive, a response not representing receptibility may be transmitted.

"The above described method can be employed for a message issued by a mobile agent. However, the second computer converts a bit sequence for the transmission of a message into a form interpretable for an agent being executed in the second computer, and transmits the converted message to the agent."

(col. 4, lines 42-57):

"The above described method, performed by the temporary storage computer for transmission of a stored agent to a destination computer is also performed for transmission of message.

"The process performed when a destination computer acquires from a temporary storage computer a bit sequence for an agent comprises the steps of: transmitting an agent acquisition request to the temporary storage computer; receiving the bit sequence for transmission of the agent from the temporary storage computer; and converting the received bit sequence for the agent into a form executable by the computer. This process is also performed to acquire a message. In this case, a process is required for checking a destination agent of an acquired message and for transmitting the message to the destination agent."

It may be appreciated that nowhere do the cited passages of Yama even remotely suggest *re-routing relevant traffic to a target device*, as required by claim 1 on appeal. For purposes of illustrating the latter point with clarity, the relationships described in the cited portions of Yama are depicted graphically in Exhibit 1, below.

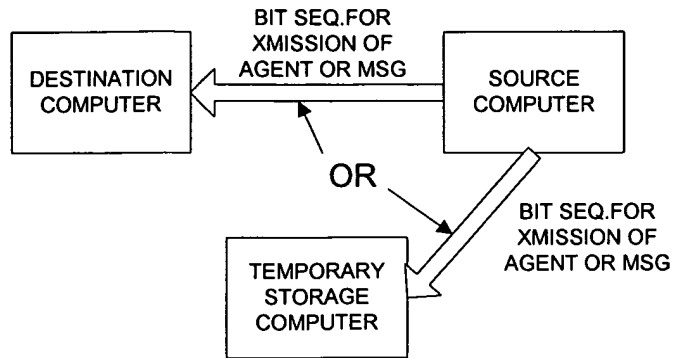


EXHIBIT 1

As can be seen in Exhibit 1, an agent and a message are, at most, only re-routed *away from* a target (destination) device, not *to* a target device. It cannot be said that the message in Yama has been "re-routed" *to* the destination device, because the destination of the message has not changed: it was and remains the destination agent, notwithstanding that the message may be kept in a temporary storage space.

By contrast, claim 1 on appeal calls for re-routing relevant traffic *to* a target device. More completely, as noted above, claim 1 recites:

- moving an agent from a first device to a target device;
- re-routing relevant traffic to the target device; and
- performing application layer gateway functionality by the agent at the target device.

To highlight the differences from Yama (Exhibit 1), the claimed relationships are illustrated below in Exhibit 2.

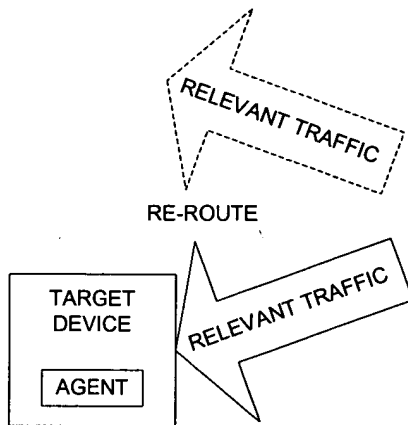
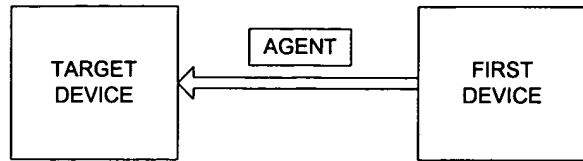


EXHIBIT 2

As can be seen in Exhibit 2, embodiments of the present invention change the routing of relevant traffic *from* an initial routing *to* or *toward* a target device. In view of the Examiner's reliance on Yama, the Examiner has misinterpreted the claims by exactly 180°. This misinterpretation is further evident in the Examiner's remarks in the Advisory Action mailed May 12, 2004. The Advisory Action responds to arguments made in the response to the final Office Action mailed February 3, 2004. In particular, in response to the Appellant's position that Yama does not teach or suggest re-routing of relevant traffic to a moved agent, the Examiner remarks that "Yama discloses re-routing messages to a server storage area that were initially destined for direct transfer to a destination computer." This statement exposes the Examiner's misconstruction unambiguously: messages are re-routed "that were initially destined for direct transfer to a destination computer" -- in other words, re-routed *away from* a target (destination) device. If the Examiner would have it that the initial destinations of the re-routed traffic according to the present claims correspond to the "destination computer" of the latter quoted remark, it is observed that the Examiner cannot have it both ways. That is, the "destination computer" of the Examiner's formulation cannot correspond to both the

claimed target computer, and to the nodes for which the traffic re-routed to the claimed target computer was originally destined.

Based on the Examiner's reliance on Yama, the Appellant speculates that the Examiner may be urging an interpretation of the clause "re-routing relevant traffic to the target device" which essentially amounts to "re-routing relevant traffic *destined for* the target device." In other words, the Examiner's position seems to be that Yama discloses traffic that has a destination device, and that the traffic is re-routed, and that therefore the noted clause of claim 1 is met. The Appellant does not dispute that Yama discloses re-routed traffic, and that the traffic has a destination device. However, it is abundantly clear that Yama does not disclose re-routing traffic to a destination device, but re-routing traffic, having a destination device, away or from that destination device. Because, by contrast, the plain terms of claim 1 call for "re-routing relevant traffic to the target device," the strained construction made by the Examiner in an effort to make claim 1 read on Yama should not be given effect.

Secondary reference Li, as noted earlier, is also silent as to "re-routing relevant traffic to the target device" as required by claim 1, and in fact the Examiner does not contend that Li suggests the limitation. Since, therefore, neither Yama nor Li teaches or suggests all the limitations of claim 1 on appeal, a prima facie case of obviousness under section 103 is not established under the above-cited authority. Claim 1 is therefore allowable over Yama and Li.

Each of independent claims 9, 17 and 21 includes recitations substantially along the same lines as claim 1, and is therefore likewise allowable over Yama and Li. Claim 9 relates to a network that includes "a route device residing on one node of the network, the route device configured to divert to the mobile agent traffic relevant to the mobile agent." Claim 17 relates to a method that includes "re-routing a relevant data stream from a source to the target device." Claim 21 relates to a "set of instructions" to implement a method that includes re-routing relevant traffic to a target device. Thus, each of claims 9, 17 and 21 sets forth both the re-routing of, and the directionality of the re-routing of the traffic, that is absent from Yama and Li.

Each of dependent claims 4-5, 7, 13, 15, and 22 includes the features of one of the independent claims by dependency thereon, and is therefore allowable over Yama and Li for at least the reasons discussed in connection with the independent claims.

In view of the foregoing, the Applicant respectfully submits that the asserted rejections under issue (A) as set forth above are unsustainable, and respectfully requests reversal of the Examiner's action with respect to issue (A).

B. With respect to issue (B) identified above, Yama, Li and Bhide et al. do not render claims 2, 11 and 18 unpatentable under 35 USC 103(a).

Claims 2, 11 and 18 were rejected under 35 USC 103(a) as being unpatentable over Yama in view of Li in view of Bhide et al. Claims 2, 11, and 18 are dependent claims that include the features of the independent claims. As demonstrated above, Yama and Li et al. do not teach or suggest the features of the independent claims. Bhide et al. does not remedy the deficiencies of Yama and Li discussed above, for at least the reason that Bhide et al. is silent as to re-routing traffic to a target device, as required by the independent claims. Thus, since claims 2, 11 and 18 are dependent claims, they are also allowable over Yama, Li and Bhide et al. for at least the reasons discussed in connection with the independent claims

In view of the foregoing, the Applicant respectfully submits that the asserted rejections under issue (B) as set forth above are unsustainable, and respectfully requests reversal of the Examiner's action with respect to issue (B).

C. With respect to issue (C) identified above, Yama, Li and Jones do not render claims 3, 12 and 19 unpatentable under 35 USC 103(a).

Claims 3, 12 and 19 were rejected under 35 USC 103(a) as being unpatentable over Yama, Li and Jones. Claims 3, 12, and 19 are dependent claims that include the features of the independent claims. As demonstrated above, Yama and Li do not teach or suggest the features of the independent claims. Jones does not remedy the

deficiencies of Yama and Li with respect to the independent claims, for at least the reason that Jones is silent as to re-routing traffic to a target device, as required by the independent claims. Thus, since claims 3, 12 and 19 are dependent claims, they are also allowable over Yama, Li and Jones for at least the reasons discussed in connection with the independent claims

In view of the foregoing, the Applicant respectfully submits that the asserted rejections under issue (C) as set forth above are unsustainable, and respectfully requests reversal of the Examiner's action with respect to issue (C).

D. With respect to issue (D) identified above, Yama, Li and Turek et al. do not render claims 6, 8 and 14 unpatentable under 35 USC 103(a).

Claims 6, 8, 14 and 16 were rejected under 35 USC 103(a) Yama in view of Li in view of Turek et al. Claims 6, 8, and 14 are dependent claims that include the features of the independent claims. As demonstrated above, Yama and Li do not teach or suggest the features of the independent claims. Turek et al., does not remedy the deficiencies of Yama and Li with respect to the independent claims, for at least the reason that Turek et al. is silent as to re-routing traffic to a target device, as required by the independent claims. Thus, since claims 6, 8, 14 are dependent claims, they are also allowable over Yama, Li and Turek et al. for at least the reasons discussed in connection with the independent claims.

In view of the foregoing, the Applicant respectfully submits that the asserted rejections under issue (D) as set forth above are unsustainable, and respectfully requests reversal of the Examiner's action with respect to issue (D).

Conclusion

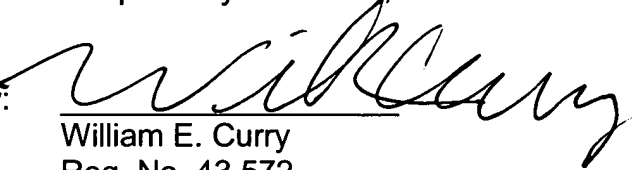
In view of the above, it is clear that the Examiner erred in finally rejecting claims 1-9 and 11-22 herein on appeal. It is therefore respectfully requested that the Board reverse the Examiner and allow claims 1-9 and 11-22.

The Examiner is invited to contact the undersigned at (202) 220-4323 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 11-0600.

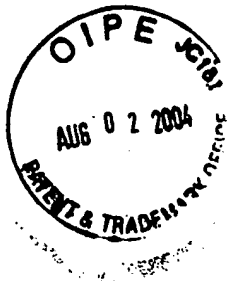
Respectfully submitted,

Dated: AUGUST 2, 2004

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APPENDIX

Claims on Appeal

1. A method for providing functionality on a network, the network comprising nodes, the method comprising:
 - moving an agent from a first device to a target device;
 - re-routing relevant traffic to the target device; and
 - performing application layer gateway functionality by the agent at the target device.
2. The method of claim 1 where the agent acts as a web cache.
3. The method of claim 1 where the agent acts as a media transcoder.
4. The method of claim 1 where the agent acts as a firewall.
5. The method of claim 1 where, to act as the application layer gateway, the agent:
 - accepts traffic sent to the target device addressed to a client device;
 - performs at least one of filtering the traffic or modifying the traffic; and
 - sends the traffic to the client device.
6. The method of claim 5 where the agent may automatically move to a second target device and act as an application layer gateway.
7. The method of claim 1 further comprising:
 - the agent, before performing application layer gateway functionality, installing a software module to aid in performing such functionality.
8. The method of claim 1 where the agent may automatically uninstall itself.

9. A network comprising:
 - a plurality of nodes;
 - a plurality of links connecting the nodes;
 - a mobile agent residing on a node of the network, where the mobile agent is able to function as an application layer gateway; and
 - a route device residing on one node of the network, the route device configured to divert to the mobile agent traffic relevant to the mobile agent.
11. The network of claim 9 where the mobile agent functions as a web cache.
12. The network of claim 9 where the mobile agent functions as a media transcoder.
13. The network of claim 9 where the mobile agent functions as a firewall.
14. The network of claim 10 where the agent may move automatically to a second node and function as an application layer gateway.
15. The network of claim 9 further comprising:
 - a software module installed on the node on which the agent is installed, the software module aiding in performing application layer gateway functionality.
16. The network of claim 9 where the agent may automatically uninstall itself.

17. A method for providing functionality on a network, the network comprising nodes, the method comprising:
- moving an agent from a first device to a target device;
 - re-routing a relevant data stream from a source to the target device; and
 - at the target device, the agent accepting the data stream from the source, performing a function on the data stream, and passing the data stream to one of a set of client devices.
18. The method of claim 17 where the function is a web cache function.
19. The method of claim 17 where the function is a media transcoder function.
20. The method of claim 17 where the function is a firewall function.
21. A set of instructions residing in a storage medium, said set of instructions capable of being executed by a processor to implement a method for providing functionality on a network, the method comprising:
- moving an agent from a first device to a target device;
 - re-routing relevant traffic to the target device; and
 - performing application layer gateway functionality at the target device by the agent.
22. The set of instructions of claim 21 where, to act as the application layer gateway, the agent:
- accepts traffic sent to the target device addressed to a client device;
 - performs at least one of filtering the traffic or modifying the traffic; and
 - sends the traffic to the client device.